



**AN ESTIMATE OF SOILS
CONTAMINATED
WITH SECONDARY
EXPLOSIVES**

Prepared for the
U.S. ARMY ENVIRONMENTAL CENTER
Aberdeen Proving Ground, Maryland

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13. ABSTRACT This report provides the results of a study that examined the quantities of explosives-contaminated soils at Army installations in the United States in order to understand the user requirements for environmental technology research and development work. This report provides a timeline for the treatment of explosives-contaminated soil and an estimate of the volume of soil remaining to be treated. Per annum information is provided regarding the number of sites that will be involved in cleanup, the projected number of planned Records of Decision (RODs) and/or Decision Documents, the planned volumes of soil to be treated, and the funds budgeted for treatment. This project is an expansion of work that was performed by TRW Systems Integration Group for the U.S. Army Environmental Center (USAEC) as reported in USAEC Report No. SFIM-AEC-ET-CR-97026. Based on 1997 data, TVA has estimated that there is a total of 155,000 cubic yards (155 KCY) of soil contaminated with secondary explosives at 15 installations (48 sites) that will require remedial action.				
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List of Acronyms and Abbreviations

AAP: Army Ammunition Plant
AD: Army Depot
BRAC: Base Realignment and Closure
CTC: Cost to Complete
DDs: Decision Documents
DSERTS: Defense Site Environmental Restoration Tracking System
FS: Feasibility Study
FUDS: Formerly Used Defense Sites
HMX: High Melting Explosive
IAPs: Installation Action Plans
KCY: Thousand cubic yards
NSWC: Naval Surface Warfare Center
PETN: Pentaerythritol Tetranitrate
ppm: Parts per million
POC: Point of Contact
R&D: Research and Development
RA: Remedial Action
RD: Remedial Design
RDX: Royal Demolition Explosive
RI: Remedial Investigation
RODs: Records of Decision
TNT: Trinitrotoluene
TRW: TRW Systems Integration Group
TVA: Tennessee Valley Authority
U.S.: United States
USAEC: United States Army Environmental Center

An Estimate of Soils Contaminated with Secondary Explosives

Purpose: The purpose of this study is to examine the quantities of explosives-contaminated soils at Army installations in the United States in order to understand the user requirements for environmental technology research and development (R&D) work. This report provides a timeline for the treatment of explosives-contaminated soil and an estimate of the volume of soil remaining to be treated over time. Per annum information is provided regarding the number of installations and sites that will be involved in cleanup, the projected number of Records of Decision (RODs) and/or Decision Documents (DDs), the planned volumes of soil to be treated, and the funds budgeted for treatment. This project is an expansion of work that was performed by TRW Systems Integration Group for the U.S. Army Environmental Center (USAEC) as reported in USAEC Report No. SFIM-AEC-ET-CR-97026. It expands the TRW report by including sites where remedial action is in progress or nearly complete and by providing annual estimates of remedial activity. TRW data has been updated in this report in cases where new information has become available since the TRW study.

Results: The U.S. Army annually updates its appraisal of environmental cleanup requirements for each U.S. installation. Documentation is provided which lists sites that are contaminated, the type of contamination, the contaminated media (soil, groundwater, surface water, etc.), purposed schedule for remediation, estimated quantities of contaminated media, and funds budgeted for cleanup. This study evaluated sites with soil contaminated by secondary explosives. Contaminated sites were divided into three groups:

1. Sites requiring remediation because of secondary explosives contamination.
2. Sites where the remediation is nearly complete or in progress.
3. Sites where secondary explosives have been detected but: a) concentrations are below action levels and remediation is not required; b) cleanup has already been completed; or c) the remediation is being driven by other types of contamination.

This study focuses on the sites in category 1.

Based on 1997 data, TVA has estimated a total of 669,000 cubic yards (669 KCY) of soil primarily contaminated with secondary explosives at 25 installations (115 sites). Of this total, 514 KCY, or 77%, is at installations that are nearly cleaned up or where cleanup is in progress. At these in-progress sites, remediation has begun or the remediation technology has been selected. The remaining 155 KCY at 15 installations (48 sites) will require selection of a remediation technology and possibly negotiation with regulators to determine the appropriate remedial action (RA). The estimates are based on information reported annually to the USAEC Environmental Restoration Division and on information obtained by directly contacting individuals who have knowledge of the specific sites. The results are shown on an annual basis in Table 1. The estimated annual reduction in the quantity of contaminated soil remaining to be treated is shown in Figure 1.

Table 1
Annual Explosives-Contaminated Soil Remediation Activity

Year	1998	1999	2000	2001	2002	2003	2004+	Total
Volume of Soil To Be Remediated, KCY	7	5	10	15	3	9	107	155
Budget for RA, \$M	5.5	2.4	4.5	5.9	1.1	3.6	45.0	68.1
Number of Sites, RA Completed	2	0	5	8	2	1	30	48
Projected Sites with New RODs/DDs	9	4	10	2	0	11	12	48

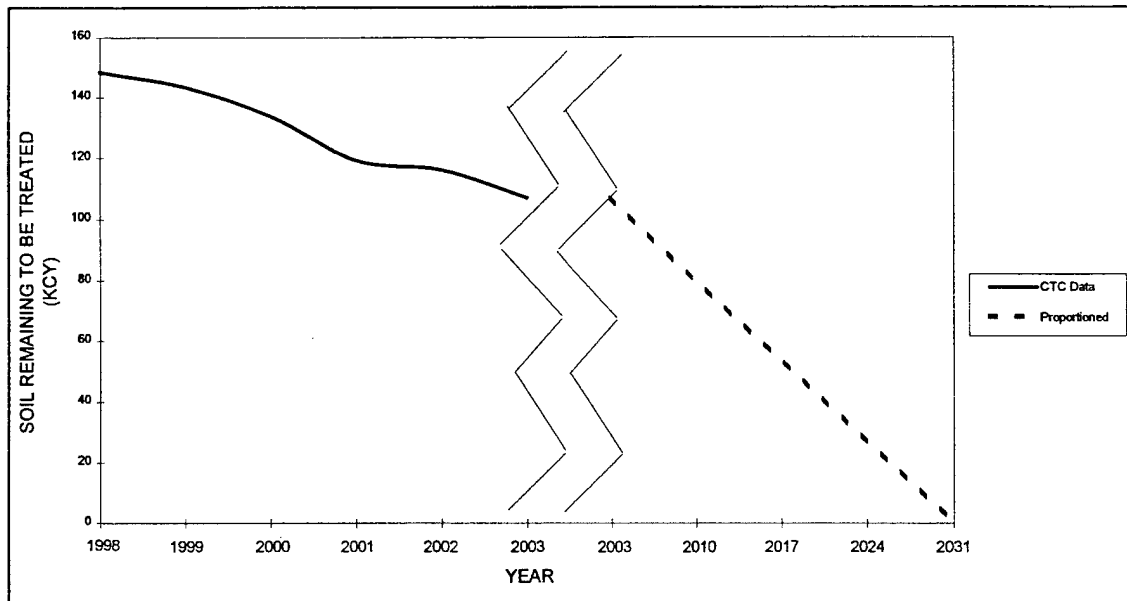
The "Volume of Soil To Be Remediated" is based on quantities provided in the Cost to Complete (CTC) Reports which are updated annually by each installation. This quantity is what the installations plan to cleanup each year if funds are available. The "Budget for RA" comes from the CTC entries for the budgeted funds for RA for each installation. This value does not include funds for remedial investigation (RI)/feasibility study (FS) or remedial design (RD). The "Number of Sites, RA Completed" provides the quantity of sites where the RA should be finished in the year indicated as identified by the cash flow of CTC budgets.

The "Projected Sites with New RODs/DDs" is an estimate of the number of sites for which a ROD or DD will be signed in the year indicated. The ROD or DD is typically signed before the RD begins. A few sites will not require a ROD or DD, but the technology for RA should be selected prior to RD. The entries in this row are taken from the CTC data as the first year of RD.

The information provided by each installation for the CTC only covers the next 6 years, which in this case is 1998-2003. All later activities are grouped under the heading "2004+." Occasionally, an Installation Action Plan (IAP) will provide outyear plans for RA, but that type of projection is not available for most sites.

Table 1 shows that 31% of the soil volume for these sites will be remediated prior to the year 2004 if funding is available. The costs of the remedial action shown averages \$439/cubic yard, which is a reasonable estimate for bioremediation at sites with varying quantities of soil to be treated. For incineration, the costs would be much higher for sites with less than 10 KCY of soil. The sites average 3.2 KCY of secondary explosives-contaminated soil each.

Figure 1
Explosives-Contaminated Soil Remaining for Remediation



Please note that two time scales are used in Figure 1 as indicated by the broken line. The CTC data for remediation of soil is only projected to the year 2003. The rate of RA after 2003 is not provided in the CTC. Most of the installations that were contacted by telephone hope to complete soil remediation by the early 2030's. For presentation purposes, the remediation after 2003 is shown in Figure 1 as a proportioned amount, assuming that all of the soil would be remediated by about 2031 and that the remediation is done at a constant rate.

Assumptions: This study is an expansion of the TRW research reported in USAEC Report No. SFIM-AEC-ET-CR-97026. All of the sites that were identified by TRW as needing remediation were reviewed to obtain the dates when remedial actions are anticipated and to update data. Also, some of the sites that TRW had identified as outside consideration for remediation were reviewed because they were flagged as explosives-contaminated soils by the Defense Site Environmental Restoration Tracking System (DSERTS) database or by input from individuals familiar with the sites. In a few cases, the TRW classifications were changed because the plans for the sites under consideration had been modified since the TRW study.

TRW eliminated sites for consideration when certain soil treatments were recommended in the IAP or CTC reports. Treatments that triggered elimination were disposal of soil in a landfill, treatment of soil by low-temperature thermal desorption, and treatment of soil by solidification. These technologies were considered to be "not consistent with explosives contamination." Although these soils may have contained explosives, the

treatment technologies seemed to have been driven by other contaminants. In this study, TRW's methodology for eliminating sites was used.

The location of contaminated soils was based on information that was obtained by querying the DSERTS database for explosives-contaminated soil and on sites identified by TRW. The contaminants of concern were the secondary explosives trinitrotoluene (TNT), Royal Demolition Explosive (RDX), High Melting Explosive (HMX), tetryl, pentaerythritol tetranitrate (PETN), ammonium picrate, and octal. The DSERTS database was searched for the appearance of secondary explosives and their common degradation products and intermediates (Table 2).

This report does not include: (a) sites contaminated by primary explosives (nitroglycerine, lead azide, and lead styphnate); (b) sites contaminated only by propellants; (c) Formerly Used Defense Sites (FUDS); or (d) Navy or Air Force sites. The evaluation of explosives-contaminated soils at FUDS was not feasible because the FUDS database does not contain the type of information needed to ascertain the basis for site cleanup at FUDS, such as the DESERTS database does for Army installations. Groundwater contamination will be investigated in a separate document.

Table 2
Analytes of Concern for the DESERTS Query

ANALYTES	
Secondary Explosives	Degradation Products and Intermediates
TNT 2,4,6-Trinitrotoluene	Nitrobenzene 1,2-Dinitrobenzene
RDX RDX (Cyclonite) Cyclonite Hexahydro-1,3,5-trinitro-1,3,5-triazine	1,3-Dinitrobenzene 1,4-Dinitrobenzene 1,3,5-Trinitrobenzene m-Nitrotoluene
HMX Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine	o-Nitrotoluene p-Nitrotoluene
Tetryl Trinitrophenylmethylnitramine	Dinitrotoluene mixture 2,4-Dinitrotoluene
PETN Pentaerythritol tetranitrate	2,6-Dinitrotoluene Picric acid
Ammonium picrate 2,4,6-Trinitrophenol ammonium salt Explosive D	
Octol	

Research & Analysis Methods: The DSERTS database was queried for sites that contained the analytes from Table 2 in either soil or sediment. The sites that were common to this DSERTS search and to the earlier evaluation by TRW were identified, and a few of the TRW classifications were modified based on more recent data.

The sites identified by the DSERTS search and the sites identified by TRW for remediation were evaluated by referring to the IAPs, the Base Realignment and Closure (BRAC) Cleanup Plans, and the CTC Reports. The IAPs and the BRAC Cleanup Plans provide historical site data and information regarding environmental concerns and proposed actions for each installation. The CTC Reports provide a summary roll-up of funding requested for environmental cleanup and a supporting page for each effected site showing brief details of the basis for the cost estimate. These plans and reports are updated annually. Most of the installations are providing the CTC data with their IAP or BRAC Cleanup Report.

The 368 sites that were identified in the DSERTS query contained a total of 6 new sites that were judged to require remediation, in addition to those identified by TRW. There were 12 TRW sites removed from this list. A few additional sites were considered because of information provided in the IAPs and BRAC Cleanup Plans.

Some of the sites were not well defined in the available documents. Phone calls were made to USAEC or site Points of Contact (POCs) to obtain additional information. Some new sites were added for consideration as a result of these phone calls. A list of sites that were judged to require remediation was developed and is provided in Appendix A.

Significant cleanup efforts have been undertaken or are already planned for several installations. USAEC and TRW previously identified sites that are nearly complete or that have cleanups in progress as shown in Table 3. Although some of these activities are scheduled in the future, the remediation technologies are already fixed. Information on the cleanup of these sites is shown in Appendix B.

One of the sites listed in Table 3, Badger Army Ammunition Plant (AAP), is designated as a site with cleanup in progress, although cleanup at two large sites (105 KCY) has been delayed. The proposed cleanup method was found to be unsuccessful in a past FS and a second FS must now be completed. The Army is currently negotiating with Wisconsin for a less stringent RA level set by a health-based risk assessment. The estimated volume of contaminated soil for Badger AAP is based on the state's rigid cleanup criteria and this volume is included in Appendix B. If the Army is successful in obtaining a less stringent action level, the volume of soil requiring cleanup at Badger AAP may be reduced to significantly less than 105 KCY.

Table 3
Installations Where Soil Remediation Is Nearly Complete or In Progress

CLEANUP NEARLY COMPLETE	CLEANUP IN PROGRESS
Alabama AAP Cornhusker AAP Louisiana AAP Savanna AD Umatilla AD	Badger AAP ¹ Hawthorne AAP Iowa AAP Joliet AAP Milan AAP Newport AAP Pueblo AD Sierra AD Tooele AD

¹Cleanup at two major sites at Badger AAP has been delayed while the Army negotiates with the state regulators.

A list of other sites that were considered, but which were eliminated from the list in Appendices A and B, is provided in Appendix C, along with the reasons for their elimination.

The CTC Reports provide estimates of soil volumes, dates for RI and FS, dates for RD, dates for RA, budgeted funds, and purposed cash flows. Generally, ROD/DD dates were not provided unless they had already been signed or would be signed within the next year. Since the ROD/DD is typically signed before RD begins, the projected year for RD, as provided in the CTC, was assumed to be the year of the ROD/DD signing if no specific date was provided in the DSERTS database. All of the information shown above was obtained for each of the sites listed in Appendices A and B and is shown therein.

The projected number of sites receiving a ROD or a DD, the number of sites undergoing RA, the amount of soil to be remediated, and the budgeted funds for soil remediation were all determined on an annual basis. The results for the annual remedial activities were shown in Table 1. The change in the estimated annual quantity of soil remaining to be treated was shown in Figure 1.

Comparison to Previous Work: TRW used the DSERTS database and information provided directly by USAEC to compile a list of 521 sites where there was suspected contamination of the soil from explosives. They evaluated these sites and came up with a list of 54 sites that were judged likely to require soil remediation and a list of 467 sites that would not require remediation driven by explosives contamination. TRW identified 50 installations with explosives contamination, but did not evaluate 15 installations where remedial action was nearly complete or in progress. These 15 installations were considered to be outside of TRW's scope of work. The present study includes 14 of the

installations that are Army sites, but does not include Crane Naval Surface Warfare Center (NSWC).

For this study, the DSERTS database revised with 1997 data was queried to determine if any additional sites should be considered. The search provided a list of 368 sites at 43 installations that had a total of 793 hits for the analytes that are listed in Table 2. The list included 200 sites at the 14 installations that are shown in Table 3 as nearly complete or in-progress sites that were not included in the TRW scope.

This study reviewed the 368 sites identified by DSERTS and the 54 sites that TRW had judged likely to require soil remediation. This study identified 48 sites (Appendix A) that require cleanup for explosive-contaminated soil. This study revised the data for 42 of the TRW sites, added 6 sites, and deleted 12 sites. This study also provides information on remediation of soils with secondary explosives contamination at 67 sites that are nearly complete or in progress as shown in Appendix B. A total of 279 of the DSERTS sites and 12 of the sites that TRW had previously included for remediation were classified as sites where the cleanup is not driven by explosives contamination (Appendix C).

There was excellent agreement between the TRW study and this current study. Of the 54 sites that TRW identified for remediation, this study confirmed that 42 are still scheduled for future work. There were 12 sites that were reclassified because the work has been performed or because the contamination was less than previously anticipated. Six sites were added as a result of information provided since the TRW study. The TRW study was based on 1996 IAP, BRAC, and CTC data that was available in March 1997. New information for 1997 was received and made available in April 1997 and that information was used for this study. The scope for the TRW study did not include sites where cleanup is nearly complete or in progress, whereas this study does.

The cleanup activities at some sites have been reduced by the trend to base the cleanup requirements on health-based risk assessments. At early cleanup sites such as Cornhusker AAP, the cleanup requirement for explosives was 5 ppm in the soil. More recent cleanup activities have negotiated requirements of 200-300 ppm of explosives in the soil because the threat to human and animal health was low based on risk assessments.

The information contained in this report is based directly on information updated annually by each installation. The IAPs, BRAC Closure Plans, CTC Reports, and DSERTS databases were reviewed. Followup telephone calls were made to installation POCs or USAEC POCs to obtain clarification when necessary. This report has attempted to summarize the data on contamination of soils by secondary explosives so that the user requirements for environmental technology R&D can be assessed.

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Appendix A

**Sites With Soils Contaminated
By Secondary Explosives
That Will Require Remedial Actions**

Appendix A

Sites With Soils Contaminated By Secondary Explosives That Will Require Remedial Actions

TVA used a query of the DSERTS database to search for sites that had secondary explosives contamination in either soil or sediment. The sites identified by the DSERTS search and the sites identified by TRW for remediation were evaluated by referring to the IAPs, the BRAC Cleanup Plans, and the CTC Reports. The 368 sites that were identified in the DSERTS query contained a total of 6 new sites that were judged to require remediation, in addition to those identified by TRW. There were 12 TRW sites removed from this list.

A list of sites requiring RAs was developed and is provided in this Appendix. The CTC Reports provided estimates of soil volumes, dates for RI and FS, dates for RD, dates for RA, funding budgets, and purposed cash flows. This information was obtained for each of the sites shown in Table A-1. Projected ROD/DD dates were estimated based on beginning of the RD. The values that are shown are from the CTC Reports unless otherwise noted with an "*". The data identified with an asterisk indicate the use of alternative information obtained by conversations with individuals who had direct knowledge about the effected installation.

A list of sites where soil remediation is nearly complete or in progress is shown in Appendix B. A list of other sites that were considered, but which were eliminated from the list in Appendices A and B, is provided in Appendix C along with the reasons for their elimination.

Table A-1: Sites Requiring Remedial Action

Site Number	Not CTC	Projected ROD YR	CTC KCY	RI/FS Year	RD Year	RA Year	RA CTC \$ 1,000	FY 98 KCY	FY 99 KCY	FY 00 KCY	FY 01 KCY	FY 02 KCY	FY 03 KCY	FY 04+ KCY	TOTAL KCY
Aniston Army Depot															
ANAD-10	*	1999	0.02	1998+2000	1999	2000	110			0.02					0.02
ANAD-11	*	1999	0.30	1998+2001	1999+01+02	2000	496			0.30					0.30
ARDEC (Picatinny Arsenal)															
PICA-001		2000	0.80	1999	2000	2001	176				0.80				0.80
PICA-079		1999	3.20		1999	2000	706			3.20					3.20
PICA-080		2003	0.80		2003	2004+	176							0.80	0.80
PICA-091		2000	1.60		2000	2001	353				1.60				1.60
PICA-131		2003	0.80		2003	2004+	176							0.80	0.80
PICA-132		2003	0.80		2003	2004+	176							0.80	0.80
PICA-145		2001	1.60		2001	2002	353					1.60			1.60
PICA-151		2003	0.40		2003	2004+	88							0.40	0.40
PICA-152		2000	0.40		2000	2001	88				0.40				0.40
PICA-165		2001	0.40		2001	2002	88					0.40			0.40
PICA-167		2003	0.40		2003	2004	88							0.40	0.40
PICA-170		2003	0.40		2003	2004+	88							0.40	0.40
Bluegrass Army Depot															
BLGR-012	*	1997	3.10		ND	1998	3,012	3.10							3.10
Camp Navajo															
NAAD-07		1998	0.40	1998	1998	1998	100	0.40							0.40
NAAD-11B		1998	1.00	1998	1998	1999-03	905		0.33	0.67					1.00
Dugway Proving Ground															
DPG-199		2004+	15.00	1998-02	2004+	2004+	11,744							15.00	15.00
Fort Irwin															
FTIR-25E		2004+	5.00	2002-04+	2004+	2004+	11,383	0.13						4.87	5.00
Fort Wingate															
FTWG-01		1998	30.00	1997+04	1998+03	2004+	6,000							30.00	30.00
FTWG-21		2004+	0.25	2004+	ND	2004+	1,620							0.25	0.25
FTWG-29		1998	1.00			1998+04+	1,600	0.07						0.93	1.00
Kansas Army Ammunition Plant															
KAAP-18, -31		1997	9.68			1998-00	5,805	3.34	3.31	3.03					9.68
Longhorn Army Ammunition Plant															
LHAAP-017		2003	8.00	1998-99	2003	2003	2,957						8.00		8.00
LHAAP-29		2003	4.20	1998+1999	2004+	2004+	1,064							4.20	4.20
LHAAP-32		2003	4.20	1998+1999	2004+	2004+	1,064							4.20	4.20
Radford Army Ammunition Plant															
RAAP-011		2004+	10.00	2004+	2004+	2004+	1,067							10.00	10.00

Table A-1: Sites Requiring Remedial Action

Site Number	Not CTC	Projected ROD YR	CTC KCY	R/FS Year	RD Year	RA Year	RA CTC \$ 1,000	FY 98 KCY	FY 99 KCY	FY 00 KCY	FY 01 KCY	FY 02 KCY	FY 03 KCY	FY 04+ KCY	TOTAL KCY
Ravena Army Ammunition Plant															
RVAAP-03		2004+	0.78	2004+	2004+	2004+	343							0.78	0.78
RVAAP-04		2004+	1.37	2004+	2004+	2004+	602							1.37	1.37
RVAAP-08		2000	1.80	1998+1999	2000	2000+2001	1,118			0.98	0.82				1.80
RVAAP-09		2000	2.18	1998+1999	2000	2004+	1,224							2.18	2.18
RVAAP-10		2000	2.48	1998+1999	2000	2004+	1,393							2.48	2.48
RVAAP-11		2000	4.56	1998+1999	2000	002+2003	2,562				0.89	1.19	1.11	1.37	4.56
RVAAP-12		2000	3.50	1998+1999	2000	2004+	687							3.50	3.50
RVAAP-13		2004+	2.04	2004+	2004+	2004+	400							2.04	2.04
Redstone Arsenal															
RSA-046		2004+	0.10		2004+	2004+	161							0.10	0.10
Seneca Army Depot															
SEAD-004		2000	8.60	1998	2000	2001	4,035				8.60				8.60
SEAD-052		2000	0.06	1998	2000	2001	27				0.06				0.06
Sunflower Army Ammunition Plant															
SAAP-004		2003	3.20		2003	2004+	271							3.20	3.20
SAAP-011		2003	1.52		2003	2004+	511							1.52	1.52
SAAP-026		2004+	0.02	2004+	2004+	2004+	28							0.02	0.02
SAAP-033		2004+	9.60		2004+	2004+	139							9.60	9.60
SAAP-034		1999	0.19	1998	1999	2000+2001	102			0.01	0.18			0.19	0.19
SAAP-035		2004+	0.40		2004+	2004+	153							0.40	0.40
SAAP-048		2004+	2.27	2003	2004+	2004+	917							2.27	2.27
Volunteer Army Ammunition Plant															
VAAP-01	*	1998	2.00	1998	1998	2004+	988							2.00	2.00
VAAP-15	*	1998	1.00		1998	2004+	495							1.00	1.00
VAAP-32	*	1998	4.00		1998	1999-01	480		1.33	1.33	1.33				4.00
TOTAL			155.42				\$ 68,119	7	5	10	15	3	9	107	155

* Information from direct inquiries superceded cost-to-complete data

Appendix B

Sites That Are Nearly Complete Or That Are In Progress

Appendix B

Sites That Are Nearly Complete Or That Are In Progress

TVA identified 368 sites that had explosives-contaminated soil using the DSERTS database. These sites included 200 sites that were at installations where remediation is nearly complete or in progress. It was found that among these 200 sites there were 67 sites where the remediation is being driven by secondary explosives contamination in the soil and/or sediment. These sites are listed in this appendix.

Appendix A contains the list of sites that require RAs. Appendix C contains a list of sites that were excluded from Appendices A and B and the rationale for excluding them.

Table B-1: Sites with Remediation Nearly Complete or In Progress

Site Number	Not CTC	Projected ROD YR	CTC KCY	R/FS Year	RD Year	RA Year	RA CTC \$ 1,000	FY 98 KCY	FY 99 KCY	FY 00 KCY	FY 01 KCY	FY 02 KCY	FY 03 KCY	FY 04+ KCY	TOTAL KCY
Badger Army Ammunition Plant															
BAAP-006	*	1998	30.00		1998	1999-03	15,081		7.30	7.30	7.30	0.73	7.37		30.00
BAAP-033	*	1998	75.00		1998-00	1998+01-0	34,481	0.54			5.16	12.05	10.02	47.22	75.00
Hawthorne Army Ammunition Plant															
HWAAP-B04	*	1998	4.00		1999	2000	754			4.00					4.00
HWAAP-B05	*	1998	4.00		1998	1999	754		4.00						4.00
HWAAP-B06	*	1998	2.00		1998	1999	377		2.00						2.00
HWAAP-B07	*	1998	2.00		1998	1998	365	2.00							2.00
HWAAP-B08	*	1998	2.00		1998	1998	365	2.00							2.00
HWAAP-B09	*	1998	2.00		1998	1998	365	2.00							2.00
HWAAP-B10	*	1998	2.00		1998	1998	365	2.00							2.00
HWAAP-B11A	*	1998	2.00		1998	1998	365	2.00							2.00
HWAAP-B12	*	1998	2.00		1998	1998	365	2.00							2.00
HWAAP-B13	*	1998	2.00		1998	1998	365	2.00							2.00
HWAAP-B14	*	1998	2.00		1998	1998	365	2.00							2.00
HWAAP-B15	*	1998	2.00		1998	1999	365		2.00						2.00
HWAAP-B16	*	1998	2.00		1998	1999	365		2.00						2.00
HWAAP-B17A	*	1998	2.00		1998	1999	365		2.00						2.00
HWAAP-B17B	*	1998	2.00		1998	1999	365		2.00						2.00
HWAAP-B18	*	1998	2.00		1998	1999	365		2.00						2.00
HWAAP-B19	*	1998	2.00		1998	1999	365		2.00						2.00
HWAAP-B20	*	1998	4.00		2002	2003	720						4.00		4.00
HWAAP-B22A	*	1998	2.00		2001	2002	365					2.00			2.00
HWAAP-B22B	*	1998	2.00		2001	2002	365					2.00			2.00
HWAAP-B23	*	1998	2.00		2000	2001	365				2.00				2.00
HWAAP-B29	*	1998	20.90		1999	2000	3,246			20.90					20.90
HWAAP-B30	*	1998	0.10		1998	1999	227		0.10						0.10
HWAAP-B31	*	1998	0.10		1998	1998	51	0.10							0.10
HWAAP-I15	*	1998	1.00		2001	2002	78					1.00			1.00
Adjustment per POC		1998	-6.00				-1,095	-2.00	-2.00	-2.00					-6.00
Iowa Army Ammunition Plant															
IAAP-016	*	1998	10.00				5,000	2.50	2.50	2.50	2.50				10.00
IAAP-MISC	*	1998	20.00				10,000	5.00	5.00	5.00	5.00	5.00	5.00		20.00

Table B-1: Sites with Remediation Nearly Complete or In Progress

Site Number	Not CTC	Projected ROD YR	CTC KCY	RI/FS Year	RD Year	RA Year	RA CTC \$ 1,000	FY 98 KCY	FY 99 KCY	FY 00 KCY	FY 01 KCY	FY 02 KCY	FY 03 KCY	FY 04+ KCY	TOTAL KCY
Joliet Army Ammunition Plant															
JAAP-002 **	*	1998	186.80		1998	2000-04+	93,522			18.68	18.68	18.68	37.36	93.40	186.80
JAAP-003	*	1998					-								
JAAP-005	*	1998					-								
JAAP-006	*	1998					-								
JAAP-006A	*	1998					-								
JAAP-007	*	1998					-								
JAAP-0L1	*	1998					-								
JAAP-0L2	*	1998					-								
JAAP-0L3	*	1998					-								
JAAP-0L7	*	1998					-								
JAAP-0L8	*	1998					-								
JAAP-0L9	*	1998					-								
JAAP-0L10	*	1998					-								
JAAP-0L14	*	1998					-								
JAAP-0L16	*	1998					-								
Milan Army Ammunition Plant															
MAAP-002 **	*	1999	29.00			1998-03	15,200	9.54	3.89	3.89	3.89	3.89	3.89		29.00
MAAP-016	*	1999					-								
MAAP-017	*	1999					-								
MAAP-033	*	1999					-								
MAAP-003 **	*	1995	29.00	1998-99	2000	2001-03	9,000				9.67	9.67	9.67		29.00
MAAP-004	*	1995					-								
MAAP-005	*	1995													
MAAP-006	*	1995													
MAAP-007	*	1995													
MAAP-008	*	1995													
MAAP-009	*	1995													
MAAP-011	*	1995													
MAAP-012	*	1995													
MAAP-013	*	1995													
MAAP-018	*	1995													
MAAP-032	*	1995													
Newport Chemical Activity															
NAAP-01		2004+	5.50		2004+	2004+	1,954							5.50	5.50
NAAP-024		1998	3.50		1998	1998-01	1,763	0.14	1.34	1.34	0.68				3.50

Table B-1: Sites with Remediation Nearly Complete or In Progress

Site Number	Not CTC	Projected ROD YR	CTC KCY	R/FS Year	RD Year	RA Year	RA CTC \$ 1,000	FY 98 KCY	FY 99 KCY	FY 00 KCY	FY 01 KCY	FY 02 KCY	FY 03 KCY	FY 04+ KCY	TOTAL KCY
Pueblo Depot Activity															
PUADA-037		1998	9.85		1998-99	1998-02	2,303	4.28				5.57			9.85
Savanna Depot Activity															
SVAD-024		2000	35.00		2000	2001-02	3,096				8.75	26.25			35.00
Sierra Army Depot															
SAID-Misc	*	1995	1.60		1997	1998	640	1.60							1.60
Tooele Army Depot															
TEAD-01	*	1998	3.00		1998	2000	193			3.00					3.00
TEAD-81	*	1998	12.00		1998	1999	1,524		12.00						12.00
TOTAL			514.35				\$ 205,074	33	43	65	64	87	77	146	514

* Information from direct inquiries superseded cost-to-complete data.

** The data for several sites at Joliet and Milan are lumped into one or two entries.

Appendix C

Sites That Do Not Require Cleanup That Is Driven by Explosives Contamination

Appendix C

Sites That Do Not Require Cleanup That Is Driven by Explosives Contamination

TVA identified 368 sites that had explosives-contaminated soil using the DSERTS database. These DSERTS sites, sites identified by TRW as sites requiring remediation, and additional sites that were identified by followup telephone conversations, were evaluated to determine if they contained explosives-contaminated soils and if RAs were nearly complete or in progress. Appendix A contains the list of sites that were identified as needing remediation for explosives-contaminated soils. Appendix B contains a list of sites where remediation is nearly complete or in progress. This appendix lists the sites that were excluded from Appendices A and B and the rationale for excluding them.

The rationale shown below follows the logic that was used by TRW in eliminating sites for consideration. The following codes are used to describe why sites were eliminated:

- IAP:** The Installation Restoration Program (IRP) milestones status in the IAP (or BRAC Cleanup Plan) indicated that no further action is planned.
- C/IP:** The "Response Complete" date was 1997 or earlier, indicating that *site* cleanup has either been completed or is in progress.
- CTCR:** Under "no further action," this means the Cost-to-Complete Report did *not* include the site, indicating that further action is *not* planned. Under "no explosives," this means the Cost-to-Complete Report did not estimate a soil volume for remediation, indicating that contamination is not a problem.
- CCNE:** "Comparison criteria not exceeded" means that soil samples fell below established criteria for explosives contamination.
- RVW:** Review of site descriptions or contact with installation managers indicated that explosives contamination was not the focus of soil remediation.
- LF:** The Cost-to-Complete Report indicates that contaminated soil will be disposed in landfill (not consistent with explosives contamination).
- TD:** The Cost-to-Complete Report indicates soil treatment by thermal desorption (not consistent with explosives contamination).
- SOL:** The Cost-to-Complete Report indicates soil treatment by solidification (not consistent with explosives contamination).

Table C-1: Sites Where Remediation Is Not Required Or Is Not Driven by Explosives Contamination

SITE #	Site Name	No Further Action			No Explosives					
		LAP	C/IP	CTCR	CCNE	RWV	CTCR	LF	SOL	TD
Aberdeen Proving Ground										
AAOA02	Surface Disposal Area				●			●		
AAOA03	Drainage Ditch									●
EAC104-B	Decontamination Pits					●				
EAC108	Lower Island Disposal Area					●				
EACC1D	Industrial Discharge	●			●		●			●
EACC1F-A	Building E5604 Area					●				
EACC1F-B	Industrial Discharge	●			●		●			
EACC1H-A	Disposal Pit/Dry Well	●			●		●			
EACC2H-A	Industrial Discharge	●			●		●			●
EACC3A	Lab					●				
EACC3E	Building E3300/E3330 Lab Complex					●				
EACC3G	Building E360X area					●				
EACC3I	Building E3570 Assembly Plant					●				
EACC3K-A	Building E37XX Complex					●				
EACI07-A	Test Area			●	●					
EACI07-B	Test Grid			●	●					
EACI07-C	Test Area			●	●					
EAGQ03-C	AOC Associated with Site 8					●				
EAJF04	Burn Area			●	●					
EAOE19	Fort Hoyle Area					●				
EAOE50	Surface Disposal Area	●								
EAWW21-B	San Domingo Munitions Assembly Pit					●				
Alabama Army Ammunition Plant										
SITE 02	Surface Disposal Area			●						
SITE 03	Landfill				●			●		
SITE 06	Waste Line						●			
SITE 07	Waste Line						●			
SITE 08	Burn Area				●				●	
SITE 09	Surface Impoundment/Lagoon				●			●		
SITE 10	Waste Line						●			
SITE 16	Burn Area						●			
SITE 17	Contaminated Building			●						

Table C-1: Sites Where Remediation Is Not Required Or Is Not Driven by Explosives Contamination

SITE #	Site Name	No Further Action			No Explosives					
		IAP	C/IP	CTCR	CCNE	RWV	CTCR	LF	SOL	TD
SITE 18	Contaminated Building			●						
SITE 19	Contaminated Building								●	
SITE 20	Contaminated Building			●						
SITE 21	Contaminated Sediments						●			
SITE 27	Contaminated Sediments			●	●					
SITE 33	Waste Line			●						
ARDEC (Picatinney Arsenal)										
PICA-002	Burn Area								●	
PICA-006	Waste Line								●	
PICA-022	Above Ground Storage Tank				●		●			
PICA-054	Spill Site Area		●						●	
PICA-058	Disposal Pit/Dry Well				●				●	
PICA-064	Building Demolition/Building Removal				●				●	
PICA-109	Contaminated Building				●		●			
PICA-114	Surface Disposal Area			●	●					
PICA-115	Powder Pressing Site							●		
PICA-126	Contaminated Building				●			●		
PICA-139	Contaminated Building							●		
PICA-146	Contaminated Building				●			●		
PICA-148	Contaminated Building				●			●		
PICA-149	Building Demolition/Building Removal				●			●		
PICA-150	Contaminated Building				●			●		
PICA-157	Spill Site Area							●		
PICA-159	Spill Site Area				●			●		
PICA-168	Storage Area				●			●		
PICA-172	Surface Disposal Area							●		
PICA-173	Surface Disposal Area				●			●		
PICA-178	Storage Area				●			●		
PICA-193	Contaminated Sediments				●			●		
Badger Army Ammunition Plant										
BAAP-001	Surface Impoundment/Lagoon				●					
BAAP-008	Disposal Pit/Dry Well				●				●	
BAAP-34	Burn Area				●			●		

Table C-1: Sites Where Remediation Is Not Required Or Is Not Driven by Explosives Contamination

SITE #	Site Name	No Further Action			No Explosives					TD
		LAP	C/IP	CTCR	CCNE	RWW	CTCR	LF	SOL	
BAAP-36	Disposal Pit/Dry Well				•				•	
Blue Grass Facility-LBAD										
BLGR-013	Disposal Pit/Dry Well	•								
BLGR-059	Explosive Ordnance Disposal Area					•				
Camp Navajo										
NAAD-03	Burn Area									•
NAAD-05	Burn Area			•						
NAAD-12	Surface Impoundment/Lagoon				•					
NAAD-13	Incinerator		•							
NAAD-14C	Spill Site Area		•		•					
NAAD-15A	Spill Site Area		•		•					
NAAD-15B	Spill Site Area		•		•					
NAAD-40	Landfill				•					
Camp Roberts										
CPRO-04	Firing Range		•		•					
Comhusker Army Ammunition Plant										
CAAP-001A	Disposal Pit/Dry Well					•				
CAAP-001AA	Disposal Pit/Dry Well					•				
CAAP-001AB	Disposal Pit/Dry Well					•				
CAAP-001AC	Disposal Pit/Dry Well					•				
CAAP-001AD	Disposal Pit/Dry Well					•				
CAAP-001AE	Disposal Pit/Dry Well					•				
CAAP-001AF	Disposal Pit/Dry Well					•				
CAAP-001AG	Disposal Pit/Dry Well					•				
CAAP-001AH	Disposal Pit/Dry Well					•				
CAAP-001AI	Disposal Pit/Dry Well					•				
CAAP-001AJ	Disposal Pit/Dry Well					•				
CAAP-001AK	Disposal Pit/Dry Well					•				
CAAP-001AL	Disposal Pit/Dry Well					•				
CAAP-001AM	Disposal Pit/Dry Well					•				
CAAP-001AN	Disposal Pit/Dry Well					•				
CAAP-001AO	Disposal Pit/Dry Well					•				
CAAP-001AP	Disposal Pit/Dry Well					•				

Table C-1: Sites Where Remediation Is Not Required Or Is Not Driven by Explosives Contamination

SITE #	Site Name	No Further Action			No Explosives					
		IAP	C/IP	CTCR	CCNE	R/W	CTCR	LF	SOL	TD
CAAP-001AQ	Disposal Pit/Dry Well					●				
CAAP-001AR	Disposal Pit/Dry Well					●				
CAAP-001AS	Disposal Pit/Dry Well					●				
CAAP-001AT	Disposal Pit/Dry Well					●				
CAAP-001AU	Disposal Pit/Dry Well					●				
CAAP-001AV	Disposal Pit/Dry Well					●				
CAAP-001B	Disposal Pit/Dry Well					●				
CAAP-001C	Disposal Pit/Dry Well					●				
CAAP-001D	Disposal Pit/Dry Well					●				
CAAP-001E	Disposal Pit/Dry Well					●				
CAAP-001F	Disposal Pit/Dry Well					●				
CAAP-001G	Disposal Pit/Dry Well					●				
CAAP-001H	Disposal Pit/Dry Well					●				
CAAP-001I	Disposal Pit/Dry Well					●				
CAAP-001J	Disposal Pit/Dry Well					●				
CAAP-001K	Disposal Pit/Dry Well					●				
CAAP-001L	Disposal Pit/Dry Well					●				
CAAP-001M	Disposal Pit/Dry Well					●				
CAAP-001N	Disposal Pit/Dry Well					●				
CAAP-001O	Disposal Pit/Dry Well					●				
CAAP-001P	Disposal Pit/Dry Well					●				
CAAP-001Q	Disposal Pit/Dry Well					●				
CAAP-001R	Disposal Pit/Dry Well					●				
CAAP-001S	Disposal Pit/Dry Well					●				
CAAP-001T	Disposal Pit/Dry Well					●				
CAAP-001U	Disposal Pit/Dry Well					●				
CAAP-001V	Disposal Pit/Dry Well					●				
CAAP-001W	Disposal Pit/Dry Well					●				
CAAP-001X	Disposal Pit/Dry Well					●				
CAAP-001Y	Disposal Pit/Dry Well					●				
CAAP-001Z	Disposal Pit/Dry Well					●				
CAAP-002A	Disposal Pit/Dry Well					●				
CAAP-002B	Disposal Pit/Dry Well					●				

Table C-1: Sites Where Remediation Is Not Required Or Is Not Driven by Explosives Contamination

SITE #	Site Name	No Further Action			No Explosives					TD
		IAP	C/P	CTCR	CCNE	RWV	CTCR	LF	SOL	
CAAP-002C	Disposal Pit/Dry Well					•				
CAAP-002D	Disposal Pit/Dry Well					•				
CAAP-002E	Disposal Pit/Dry Well					•				
CAAP-002F	Disposal Pit/Dry Well					•				
CAAP-002G	Disposal Pit/Dry Well					•				
CAAP-002H	Disposal Pit/Dry Well					•				
CAAP-002I	Disposal Pit/Dry Well					•				
CAAP-002J	Disposal Pit/Dry Well					•				
CAAP-003	Landfill				•	•	•			
CAAP-004	Disposal Pit/Dry Well					•	•			
CAAP-005	Burn Area					•	•			
Dugway Proving Ground										
DPG-004	Lab				•				•	
DPG-007	Above Ground Storage Tank				•			•		
DPG-080	Surface Disposal Area				•					
DPG-118	Test Vat				•			•		
DPG-203	Surface Disposal Area				•					
Fort Bliss										
FTBL-072	Unexploded Munitions/Ordnance Area				•					
Fort Carson										
FTC-017	Burn Area				•					
FTC-019	Explosive Ordnance Disposal Area	•			•		•			
FTC-040	Surface Disposal Area	•			•		•			
Fort Drum										
FTD-022	Explosive Ordnance Disposal Area		•		•					
Fort Gordon										
FTGD-021	Burn Area			•	•					
FTGD-022	Explosive Ordnance Disposal Area								•	
FTGD-036	Burn Area		•		•			•		
Fort Huachuca										
FTHU-17	Burn Area				•					
FTHU-18	Burn Area				•					

Table C-1: Sites Where Remediation Is Not Required Or Is Not Driven by Explosives Contamination

SITE #	Site Name	No Further Action			No Explosives					TD
		IAP	C/IP	CTCR	CCNE	RWV	CTCR	LF	SOL	
Fort Irwin										
FTIR-06	Landfill				●		●	●		
FTIR-07	Mixed Waste Area							●		
FTIR-08	Mixed Waste Area							●		
FTIR-22	Explosive Ordnance Disposal Area			●	●		●			
FTIR-23	Explosive Ordnance Disposal Area	●	●	●	●					
FTIR-24	Explosive Ordnance Disposal Area	●	●	●	●					
FTIR-25C	Explosive Ordnance Disposal Area	●	●	●	●					
FTIR-25D	Explosive Ordnance Disposal Area	●	●	●						
FTIR-25F	Explosive Ordnance Disposal Area	●	●	●	●					
FTIR-34	Landfill				●		●	●		
FTIR-41	Explosive Ordnance Disposal Area				●		●	●		
Fort Knox										
FTKX-29	Unexploded Munitions/Ordnance Area				●					
Fort Riley										
FTRI-009	Explosive Ordnance Disposal Area				●		●			
Fort Stewart										
FST-012	Explosive Ordnance Disposal Area		●		●					
Fort Wingate										
FTWG-03	Explosive Ordnance Disposal Area							●		
FTWG-04	Burn Area						●			
FTWG-05	Surface Disposal Area							●		
FTWG-07	Building 530 Deactivation Furnace	●		●						
FTWG-13	Landfill		●	●						
Hawthorne Army Ammunition Plant										
HWAAP-A06B	Landfill						●	●		
HWAAP-A06D	Landfill						●	●		
HWAAP-A06E	Surface Disposal Area						●	●		
HWAAP-A09A	Surface Disposal Area		●	●	●				●	
HWAAP-B24	Acid Impoundment									
HWAAP-B27A	Catchment Pit	●								
HWAAP-B27B	Oxidation Ditch	●								
HWAAP-B32	Surface Impoundment/Lagoon				●					

Table C-1: Sites Where Remediation Is Not Required Or Is Not Driven by Explosives Contamination

SITE #	Site Name	No Further Action			No Explosives					TD
		IAP	C/IP	CTCR	CCNE	RWV	CTCR	LF	SOL	
HWAAP-C04	Contaminated Fill				•		•			
HWAAP-C05	Contaminated Fill				•		•			
HWAAP-G01B	Burn Area						•			
HWAAP-G01C	Burn Area						•			
HWAAP-102	Burn Area							•		
HWAAP-104	Surface Impoundment/Lagoon				•					
HWAAP-122	Burn Area				•		•			
HWAAP-123	Landfill				•		•			
HWAAP-J14	Spill Site Area				•					
HWAAP-J28	Surface Impoundment/Lagoon				•					
HWAAP-J29	Landfill								•	
HWAAP-102	Open Burning Pit							•		
Holston Army Ammunition Plant										
HSAAP-15	Burn Area								•	
HSAAP-23	Production Line		•							
HSAAP-33	Surface Impoundment/Lagoon		•	•	•					
Indiana Army Ammunition Plant										
INAAP-04	Surface Impoundment/Lagoon				•					
INAAP-05	Surface Impoundment/Lagoon									•
INAAP-06	Surface Impoundment/Lagoon				•					
INAAP-17	Burn Area				•					
INAAP-25	Surface Impoundment/Lagoon				•					
INAAP-26	Burn Area				•					
INAAP-34	Burn Area				•					
INAAP-35	Contaminated Building				•					
INAAP-54	P&E Area Flume				•					•
INAAP-59	Landfill				•					
INAAP-60	Landfill				•					
INAAP-63	P&E Area				•					
Iowa Army Ammunition Plant										
IAAP-001	Ammo Lap							•		
IAAP-002	Ammo Lap							•		
IAAP-003	Spill Site Area							•		

Table C-1: Sites Where Remediation Is Not Required Or Is Not Driven by Explosives Contamination

SITE #	Site Name	No Further Action			No Explosives					TD
		IAP	C/IP	CTCR	CCNE	RWV	CTCR	LF	SOL	
IAAP-004	Spill Site Area							•		
IAAP-005	Spill Site Area				•			•		
IAAP-006	Spill Site Area							•		
IAAP-011	Line							•		
IAAP-012	Explosive Ordnance Disposal Area							•		
IAAP-019	Contaminated Building		•		•			•		
IAAP-025	Incinerator				•			•		
IAAP-036	Burn Area				•			•		
IAAP-037	Landfill				•			•		
IAAP-044	Surface Impoundment/Lagoon							•		
Joliet Army Ammunition Plant										
JAAP-001	Landfill				•			•		
JAAP-009	Landfill				•			•		
JAAP-L15	Group 5 - Fuze and Booster Area					•				
Kansas Army Ammunition Plant										
KAAP-10	Burn Area									•
KAAP-16	Sump/Washout Area									•
KAAP-17	Industrial Discharge									•
KAAP-20	Industrial Discharge									•
KAAP-22	Industrial Discharge									•
KAAP-32	Surface Impoundment/Lagoon			•						•
Letterkenny Army Depot										
LEAD-046	Explosive Ordnance Disposal Area							•		
LEAD-050	Waste Treatment Plant						•			
LEAD-053	Burn Area							•		
Lone Star Army Ammunition Plant										
LSAAP-017	Explosive Ordnance Disposal Area				•					
LSAAP-018	Explosive Ordnance Disposal Area		•							
LSAAP-073	RDX Pit K-2	•		•						
LSAAP-201	RDX Pits, Pits and VW Sumps		•							
Louisiana Army Ammunition Plant										
All Sites		•					•			

Table C-1: Sites Where Remediation Is Not Required Or Is Not Driven by Explosives Contamination

SITE #	Site Name	No Further Action			No Explosives					TD
		LAP	C/IP	CTCR	CCNE	RW	CTCR	LF	SOL	
Milan Army Ammunition Plant										
MAAP-014	Surface Impoundment/Lagoon						•			
MAAP-034	Drainage Ditch						•			
MAAP-035	Drainage Ditch						•			
Newport Chemical Activity										
NAAP-037	Surface Impoundment/Lagoon				•			•		
Pueblo Depot Activity										
PUADA-003	Unexploded Munitions/Ordnance Area					•				
PUADA-006	Burn Area									
PUADA-055	Surface Impoundment/Lagoon					•		•		
Radford Army Ammunition Plant										
RAAP-005	Burn Area						•			
RAAP-014	Landfill							•	•	
RAAP-018	Landfill					•			•	
RAAP-030	Burn Area					•		•		
RAAP-035	Waste Line							•		
RAAP-036	Surface Impoundment/Lagoon	•		•						
Ravenna Army Ammunition Plant										
RVAAP-01	Landfill		•			•				
RVAAP-05	Burn Area							•		
RVAAP-26	Fuze & Booster Area Settling Tanks						•			
RVAAP-29	Surface Impoundment/Lagoon					•		•		
RVAAP-31	Ret. Pond					•				
Redstone Arsenal										
RSA-005	Storage Area					•				
RSA-010	Landfill					•		•		
RSA-013	Burn Area					•		•		
RSA-014	Burn Area					•		•		
RSA-062	Unexploded Munitions/Ordnance Area					•		•		
RSA-113	Surface Disposal Area					•		•	•	
RSA-132	Contaminated Groundwater					•		•		
RSA-133	Disposal Pit/Dry Well					•		•		

Table C-1: Sites Where Remediation Is Not Required Or Is Not Driven by Explosives Contamination

SITE #	Site Name	No Further Action			No Explosives						
		IAP	C/IP	CTCR	CCNE	RVM	CTCR	LF	SOL	TD	
Savanna Depot Activity											
SVAD-007	Burn Area				●			●			
SVAD-011	Burn Area							●	●		
SVAD-013	Burn Area								●	●	
SVAD-014	Burn Area				●				●	●	
Seneca Army Depot											
SEAD-023	Explosive Ordnance Disposal Area							●			
SEAD-044	Pesticide Shop				●					●	
Sierra Army Depot											
SIAD-001	Disposal Pit/Dry Well			●				●			
SIAD-010	Burn Area				●					●	
SIAD-016	Burn Area	●		●							
Tobele Army Depot, North Area											
TEAD-18	Demolition Facility										
TEAD-29	Incinerator	●	●		●			●			
TEAD-34	Surface Impoundment/Lagoon							●			
TEAD-36	Test Range							●			
TEAD-37	Incinerator							●			
TEAD-58	Contaminated Soil Piles				●			●			
Tobele Army Depot, South Area											
TEAD(S)-24	Unexploded Munitions/Ordnance Area			●	●						
Umatilla Army Depot Activity											
UMAD-022	Contaminated Building		●	●							
UMAD-023	Surface Impoundment/Lagoon						●				
UMAD-024	Surface Impoundment/Lagoon						●				
UMAD-042	Contaminated Sediments		●	●							
UMAD-090	Explosive Ordnance Disposal Area		●				●				
UMAD-094	Disposal Pit/Dry Well		●				●				
White Sands Missile Range											
WSMR-01	Unexploded Munitions/Ordnance Area			●							
WSMR-02	Explosive Ordnance Disposal Area							●			
WSMR-03	Explosive Ordnance Disposal Area							●			
WSMR-04	Unexploded Munitions/Ordnance Area							●			

Table C-1: Sites Where Remediation Is Not Required Or Is Not Driven by Explosives Contamination

SITE #	Site Name	No Further Action			No Explosives					TD
		IAP	C/IP	CTCR	CCNE	RVW	CTCR	LF	SOL	
WSMR-05	Landfill							•		
WSMR-12	Burn Area		•				•			
WSMR-14	Landfill				•			•		
WSMR-20	Landfill		•	•						
WSMR-23	Landfill							•		
WSMR-24	Incinerator						•			
WSMR-70	Landfill				•			•		
WSMR-71	Landfill				•			•		
Yuma Proving Ground										
YPG-37	77th EOD Demo Area				•					